Space Weather Forecast

Issued on Wednesday, 11 May 2022 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm 10 and 11 May. Chance of Moderate-class flares and radio blackouts throughout. Slight chance of Strong flares throughout.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been High with a Strong-class flare from a complex region in the south-central disc. A further complex region in the southeast quadrant has produced a Common-class flare. Both eruptions resulted in CMEs (coronal mass ejections). The eruption from the central CME will be analysed when further data become available to determine whether it has an Earth-directed component.

Solar Wind / Geomagnetic Activity: The solar wind has been at ambient levels. Total magnetic field strength has been mainly weak, with a brief spike to moderate levels halfway through the period. The important north-south component, Bz also experienced a brief negative spike around the same time, but has otherwise varied weakly. Resultant geomagnetic activity has been Quiet (Kp0-2).

Energetic Particles / Solar Radiation: No solar radiation storms have been observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is likely to be mainly Low, but with a Chance of Moderate activity, due to two complex regions on the visible disc. There is also a Slight Chance of High activity and Strong flares, with the main risk from the large complex region ion the south-centre disc.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 06 May was expected to arrive at Earth on 10 May, with a smaller risk of an arrival on 11 May. A fast wind was also due to affect the Earth from on 10 May, but again with a smaller risk of arrival on 11 May. No further features are expected to affect the Earth through the remainder of the period, but a potential Earth-directed CME which erupted on 10 May which will be analysed once further data becomes available and could arrive at Earth by the end of the period. Geomagnetic activity is expected to be mainly Quiet to Unsettled with a slight chance of G1 storms on 11 May due to any delayed arrival of the CME or fast wind. A return to mainly Quiet conditions is then likely by the 12 May, although this will need to be reviewed in the light of any potential new CMEs from 10 May.

Energetic Particles / Solar Radiation: There is an increasing risk of S1 storms through the period as the two complex sunspot regions rotate across into the western hemisphere, where any storm is more likely to be Earth-directed.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	Yes	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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